

Application No.: 09/758,949

Docket No.: 102323-0061

**AMENDMENTS TO THE CLAIMS**

This Listing of the Claims will replace all prior versions, and listing, of claims in the application.

**Listing of the Claims:**

1. (Currently Amended) A digital data system comprising  
  
a plurality of nodes interconnected by at least one link,  
  
the nodes being configured to communicate message packets on the link, ~~each~~ a message packet having a format and a plurality of symbols that are transmitted by a first node on ~~the~~ a link and received by a second ~~another~~ node on the link, wherein the message packet is aligned in relation to a frame signal,  
  
at least one of said first and said second nodes being configured to communicate a link level control symbol,  
  
the link level control symbol being interposed between symbols of a message packet as an additional symbol to signal an adjacent node on the link,  
  
such that the adjacent node receives the additional symbol before completion of the message packet to effect a link level control of message flow on the link.
2. (Original) A digital data system according to claim 1, wherein said additional symbol is asserted with a marker whereby the adjacent node detects the control symbol within the message packet to effect said link level control of message flow.
3. (Original) A digital data system according to claim 1, wherein at least one node includes at least one of  
  
(i) an input buffer that at least temporarily stores a received message, and

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- (ii) an output buffer that at least temporarily stores a message for transmission,
- and the control symbol effects a link level control to prevent buffer overflow.
4. (Currently Amended) A digital data system according to claim 1, wherein a message includes an error code for detecting corruption of a received message, and a receiving node that receives two portions of a message packet surrounding a control symbol realigns the received portions to apply the error code to the two ~~surrounding~~ portions of the message packet surrounding the control symbol.
5. (Currently Amended) A digital data system according to claim 1, wherein ~~the~~ a control symbol instructs a receiving node to reduce its message transmission rate.
6. (Currently Amended) A digital data system according to claim 1, wherein ~~the~~ a control symbol includes a control code for identifying one of
- i) a faulty message transmission, and
- ii) a faulty message reception.
7. (Currently Amended) A digital data system according to claim 1, wherein the link is bi-directional, and interconnects ~~the~~ a first node at one end of the link with ~~the~~ a second node at another end of the link, said first and second nodes being full duplex nodes.
8. (Currently Amended) A digital data system according to claim 4, where in ~~the~~ a control symbol instructs the adjacent node to reduce its message transmission rate by transmitting a specified number of idle states so as to match receiver capacity to transmission rate.
9. (Currently Amended) A digital data system comprising ~~according to claim 1,~~

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a plurality of nodes interconnected by at least one link,

the nodes being configured to communicate message packets on the link, each message packet having a format and a plurality of symbols that are transmitted by a first node on the link and received by a second node on the link, wherein the message packet is aligned in relation to a frame signal,

at least one of said first and said second nodes being configured to communicate a link level control symbol,

the link level control symbol being interposed between symbols of a message packet as an additional symbol to signal an adjacent node on the link,

such that the adjacent node receives the additional symbol before completion of the message packet to effect a link level control of message flow on the link

wherein said additional symbol is asserted with a marker whereby the adjacent node detects the control symbol within the message packet to effect said link level control of message flow

wherein a node transmits the interposed control symbol in alignment with a symbol boundary in a message packet, whereby received data may be passed through a register of fixed size and the control symbol is discerned via the marker, permitting alignment of portions of a message packet irrespective of interposition of the control symbol therebetween.

10. (Currently Amended) A digital data system according to claim 1, comprising a plurality of links forming an interconnect fabric among plural devices, the links interconnecting, and wherein each link has one ~~a~~ first node attached to one end of the link and another ~~a~~ second node attached to another end of the link, the nodes cooperating to route messages along interconnected links between the devices of the system.

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## 11. (Currently Amended) A digital data system comprising

a plurality of nodes interconnected by at least one link,

the nodes being configured to communicate message packets on the link between a first node on the a link and a second node on the link, each a message packet having a format and including a plurality of symbols, wherein the message packet is aligned in relation to a frame signal,

at least one of said first and said second nodes (~~“transmitting node”~~) being configured to transmit ~~communicate~~ a link level THROTTLE control symbol to the other of said first and said second nodes,

the link level THROTTLE control symbol being interposed between symbols of the message packet,

the link level THROTTLE control symbol being effective to induce the other of said first and said second nodes (~~“receiving node”~~) receiving said THROTTLE control symbol to

i) control message transmission of said ~~receiving node~~ the other of said first and said second nodes receiving said THROTTLE control symbol

ii) controlling said transmission to space out transmission of data messages to regulate flow in said link between the ~~receiving node~~ the other of said first and said second nodes receiving said THROTTLE control symbol and the ~~transmitting node~~ the one of said first and said second nodes transmitting said THROTTLE control symbol.

12. (Currently Amended) A digital data system according to claim 11, wherein the THROTTLE control symbol instructs the other of said first and said second nodes receiving said THROTTLE control symbol ~~a transmitting node~~ to transmit at least one idle state symbol between data messages.

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13. (Currently Amended) A digital data system according to claim 12, wherein the THROTTLE control symbol instructs ~~a transmitting node~~ the other of said first and said second nodes receiving said THROTTLE control symbol to transmit a specified number of idle state symbols.
14. (Currently Amended) A digital data system according to claim 13, wherein the THROTTLE control symbol includes an override code to instruct ~~a transmitting node~~ the other of said first and said second nodes receiving said THROTTLE control symbol to resume message transmission.
15. (Original) A digital data system according to claim 11, wherein said at least one node is configured to transmit the THROTTLE control symbol responsive to buffer state and thereby reduce incoming data rate.
16. (Currently Amended) A digital data system comprising
- a plurality of nodes interconnected by at least one link,
- the nodes being configured to communicate message packets on the link between a first node on ~~the~~ a link and a second node on the link, each a message packet having a format and including a plurality of symbols, wherein the message packet is aligned in relation to word boundaries,
- adjacent ones of said first and second nodes being configured to communicate an IDLE state control symbol effective when transmitted by a transmitting node to reduce rate of data flow in said link to a receiving node while maintaining communication between the receiving node and the transmitting node, ~~and~~
- the IDLE state control symbol being interposed between symbols of the message packet,  
and

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wherein, on receipt of the IDLE state control symbol, the second node implements a control action designated by the control symbol, and suspends its message symbol byte count until further message packets are received.

17. (Previously Amended) The digital data system of claim 16, wherein the transmitting node transmits data from an output section, and transmits the IDLE state control symbol so as to lower its data output rate to match a rate at which data is available to said output section.
18. (Original) The digital data system of claim 16, wherein the transmitting node transmits the IDLE state control symbol interposed within a message packet to implement a link level flow control of message data to an adjacent node receiving the message packet.
19. (Previously Amended) The digital data system of claim 16, wherein the transmitting node transmits the IDLE state control symbol in response to a control symbol received from an adjacent receiving node.
20. (Previously Amended) The digital data system of claim 16, wherein the control symbol received from a receiving node is a control symbol embedded in a message packet sent by an adjacent receiving node.
21. (Currently Amended) A digital data system comprising

adjacent first and second nodes interconnected by a link of a link interconnect system,

said nodes being configured to pass data messages therebetween over said link, each a data message including at least one message packet, and said nodes also being configured to pass at least one link-level control symbol for control of a link-level message mechanism

wherein both the first and second nodes are capable of sending a link level control symbol

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wherein at least one of said first and second nodes sends a link level control symbol over the link indicative of a message fragment to thereby prevent propagation of faulty messages in the link interconnect system.

22. (Currently Amended) The digital data system of claim 21, wherein the link level control symbol is a STOMP symbol sent responsive to an error in a message sent on the link, an adjacent node receiving the STOMP control initiating a message retry acknowledgement signal to initiate retransmission of the ~~affected message~~ containing the error.
23. (Original) The digital data system of claim 21, wherein the link level control symbol is a STOMP symbol sent by a transmitting node to an adjacent receiving node, the STOMP control symbol indicating an end of an in-process message packet transmission.
24. (New) A digital data system according to claim 9, wherein at least one node includes at least one of
  - (i) an input buffer that at least temporarily stores a received message, and
  - (ii) an output buffer that at least temporarily stores a message for transmission,and the control symbol effects a link level control to prevent buffer overflow.
25. (New) A digital data system according to claim 9, wherein a message includes an error code for detecting corruption of a received message, and a receiving node that receives two portions of a message packet surrounding a control symbol realigns the received portions to apply the error code to the two portions of the message packet surrounding the control symbol.
26. (New) A digital data system according to claim 9, wherein the control symbol instructs a receiving node to reduce its message transmission rate.

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27. (New) A digital data system according to claim 9, wherein the control symbol includes a control code for identifying one of
- i) a faulty message transmission, and
  - ii) a faulty message reception.
28. (New) A digital data system according to claim 9, wherein the link is bi-directional, and interconnects the first node at one end of the link with the second node at another end of the link, said first and second nodes being full duplex nodes.
29. (New) A digital data system according to claim 25, where in the control symbol instructs the adjacent node to reduce its message transmission rate by transmitting a specified number of idle states so as to match receiver capacity to transmission rate.
30. (New) A digital data system according to claim 9, comprising a plurality of links forming an interconnect fabric among plural devices, the links interconnecting, and wherein each link has one node attached to one end of the link and another node attached to another end of the link, the nodes cooperating to route messages along interconnected links between the devices of the system.